

CLAIMS

What is claimed is:

1. An apparatus for inspecting a reflective EUV mask blank for defects, comprising:

5 an EUV light source; and

means for simultaneously imaging multiple points in an area of a mask blank using reflections of light from said EUV light source impinging on said mask blank.

2. An apparatus as recited in claim 1, wherein said EUV light source comprises a synchrotron.

3. An apparatus as recited in claim 1, wherein said means for imaging comprises an EUV detector positioned to record said reflections.

4. An apparatus as recited in claim 3, wherein said EUV detector comprises a CCD camera array.

5. An apparatus as recited in claim 3, wherein said EUV detector comprises a micro-channel plate detector.

20

6. An apparatus as recited in claim 1, further comprising a pinhole filter positioned between said EUV light source and said mask blank.

7. An apparatus for inspecting a reflective EUV mask blank for defects, comprising:

means for directing EUV light to a mask blank; and

5 means for simultaneously imaging multiple points of an area of a mask blank using reflections of EUV light impinging on said mask blank.

8. An apparatus as recited in claim 7, wherein said means for directing EUV light comprises a synchrotron.

9. An apparatus as recited in claim 7, wherein said means for imaging comprises an EUV detector positioned to record said reflections.

10. An apparatus as recited in claim 9, wherein said EUV detector comprises a CCD camera array.

11. An apparatus as recited in claim 9, wherein said EUV detector comprises a micro-channel plate detector.

20 12. An apparatus as recited in claim 7, further comprising a pinhole filter positioned between said means for directing EUV light and said mask blank.

13. An apparatus for inspecting a reflective EUV mask blank for defects, comprising:
an EUV light source configured to direct a beam of light toward a mask blank;
5 and
an EUV detector configured to simultaneously image multiple points of an area of said mask blank using light from said EUV light source reflected from said area of said mask blank to be imaged.

14. An apparatus as recited in claim 13, wherein said EUV light source comprises a synchrotron.

15. An apparatus as recited in claim 13, wherein said EUV detector comprises a CCD camera array.

16. An apparatus as recited in claim 13, wherein said EUV detector comprises a micro-channel plate detector.

17. An apparatus as recited in claim 13, further comprising a pinhole filter positioned between said EUV light source and said mask blank.

18. An apparatus for inspecting a reflective EUV mask blank for defects, comprising an EUV light source positioned to direct a beam of light to a mask blank, and an EUV detector positioned to simultaneously record the reflection from a multiple points of an area of the mask blank in a single exposure to said EUV light source.

5

19. An apparatus as recited in claim 18, wherein said EUV light source comprises a synchrotron.

20. An apparatus as recited in claim 18, wherein said EUV detector comprises a CCD camera array.

21. An apparatus as recited in claim 18, wherein said EUV detector comprises a micro-channel plate detector.

22. An apparatus as recited in claim 18, further comprising a pinhole filter positioned between said EUV light source and said mask blank.

23. A method for inspecting a reflective EUV mask blank for defects, comprising simultaneously imaging multiple points of an area of a mask blank using 20 reflections of light from an EUV light source impinging on said mask blank.

10 24. A method as recited in claim 23, wherein said EUV light source comprises
a synchrotron.

15 25. A method as recited in claim 23, wherein said area of said mask blank is
5 imaged using an EUV detector.

20 26. A method as recited in claim 25, wherein said EUV detector comprises a
CCD camera array.

25 27. A method as recited in claim 25, wherein said EUV detector comprises a
micro-channel plate detector.

30 28. A method as recited in claim 23, further comprising filtering said EUV light
source with a pinhole filter.

35 29. A method for inspecting a reflective EUV mask blank for defects,
comprising:

20 directing a beam of light from an EUV light source toward a mask blank; and
simultaneously imaging multiple points of an area of said mask blank using light
from said EUV light source reflected from said area of said mask blank to be imaged.

30. A method as recited in claim 28, wherein said EUV light source comprises a synchrotron.

31. A method as recited in claim 23, wherein said area of said mask blank is 5 imaged using an EUV detector.

32. A method as recited in claim 31, wherein said EUV detector comprises a CCD camera array.

33. A method as recited in claim 31, wherein said EUV detector comprises a micro-channel plate detector.

34. A method as recited in claim 31, further comprising filtering said EUV light source with a pinhole filter.

35. A method for inspecting a reflective EUV mask blank for defects, comprising:

positioning an EUV light source to direct a beam of light to a mask blank;
positioning an EUV detector to simultaneously record the reflection from multiple 20 points of an area of the mask blank in a single exposure to said EUV light source; and analyzing said recorded reflection to determine the presence of a defect in said mask blank.

36. A method as recited in claim 35, wherein said EUV light source comprises a synchrotron.

5 37. A method as recited in claim 35, wherein said EUV detector comprises a CCD camera array.

38. A method as recited in claim 35, wherein said EUV detector comprises a micro-channel plate detector.

39. A method as recited in claim 35, further comprising filtering said EUV light source with a pinhole filter.

10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95